2A92-16

REVIEW OF THE 1992 LOWER COOK INLET AREA COMMERCIAL AND SUBSISTENCE SALMON FISHERIES

REPORT TO THE ALASKA BOARD OF FISHERIES

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COMMERCIAL SALMON FISHERY

INTRODUCTION

The 1992 Lower Cook Inlet (LCI) salmon harvest was the third consecutive economically disastrous season for commercial fishermen in this management area. The total overall harvest of 684,928 fish (Table 1) was the third lowest total in the last fifteen years, yielding an exvessel value of $1.5 million for the entire fishery, only about half of the twenty year average (Table 2). Additionally, the harvest represented only 38 percent of the preseason forecast. The following table compares the actual catch by species to the preseason forecast:

SPECIES	PROJECTED HARVEST	ACTUAL HARVEST[a]	1972-1991 AVERAGE
Chinook	8,400[b]	1,891	898
Sockeye	483,000	176,644	152,866
Coho	17,200[b]	4,422	11,655
Pink	1,131,000	479,768	942,130
Chum	143,000	22,203	112,395
TOTAL	1,782,600	684,928	1,219,944

[a] Preliminary figures.
[b] Projected figures for these species include only returns from enhancement projects intended for recreational fisheries.

Lower Cook Inlet commercial salmon harvests rely heavily on the success of hatchery and enhanced fish production. Approximately 80

percent of the sockeye salmon harvest in both numbers of fish and exvessel value was attributed to joint FRED Division/Cook Inlet Aquaculture Association (CIAA) lake stocking and fertilization projects at Leisure and Hazel Lakes in the Southern District and Chenik and Kirschner Lakes in the Kamishak Bay District. Returns of pink salmon to Tutka Bay Hatchery and a remote release site at Halibut Cove Lagoon were once again poor in 1992, yielding overall catches only half of the forecasted levels, yet these returns still provided over three-fourths of the total LCI pink salmon harvest. However, nearly 58 percent of all pinks harvested in Lower Cook Inlet during 1992 were utilized for cost recovery purposes by CIAA. Weak natural returns of pink salmon and below average hatchery returns, in combination with 1960's-level prices for this species, made the overall 1992 LCI exvessel value the lowest since 1976.

SUMMARY BY SPECIES

Chinook Salmon

The 1992 harvest of chinook salmon, not normally a commercially important species in Lower Cook Inlet, was the second highest catch on record and only two fish less than the record 1989 harvest of 1,893 chinook (Figure 1, Table 3). Approximately 98 percent of the

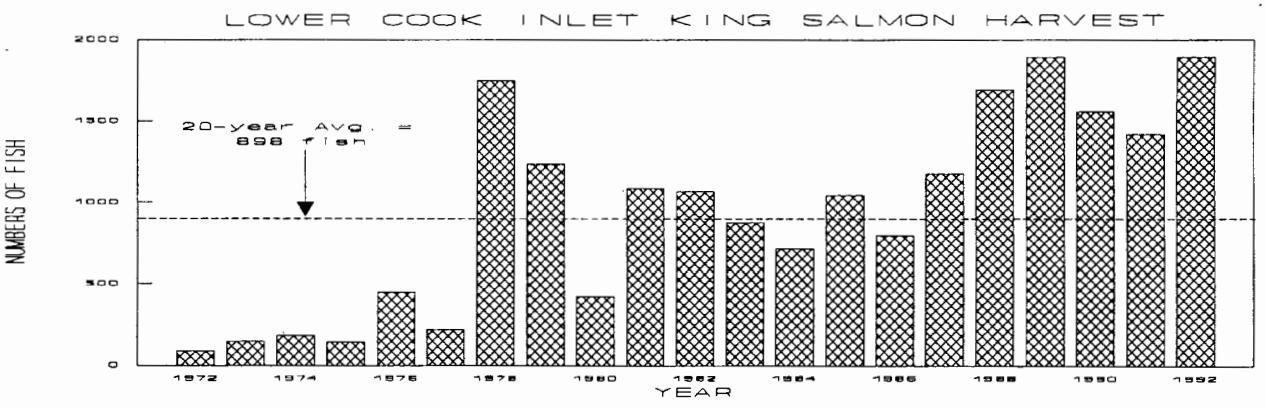

Figure 1. Historical commercial harvests of chinook salmon, Lower Cook Inlet, 1972-1992.

catch came from the Southern District and was due primarily to enhanced production at Halibut Cove Lagoon and Seldovia Bay. Set gillnetters accounted for 70 percent of the Southern District chinook catch, with purse seiners taking the remaining 30 percent.

NOTE: PROPOSAL #24 seeks to impose restrictions on the retention of chinook salmon in the commercial purse seine fishery in Halibut Cove Lagoon.

Sockeye Salmon

The 1992 LCI sockeye salmon harvest of 177,000 fish (Figure 2, Table 3) was the second lowest since 1982 and was only 37 percent of the preseason forecast. Enhanced returns of sockeye salmon to Leisure and Hazel Lakes in the Southern District, estimated at 94,000 fish, were approximately 37 percent below the preseason combined forecast of 150,000 fish to both systems. In the Kamishak Bay District, an expected return of 125,000 sockeye to Chenik Lake, another enhanced system, failed to materialize, with the final total return estimated at only 23,000 fish. An outbreak of a naturally occurring viral disease known as Infectious Hematopoietic Necrosis (IHN), commonly affecting juvenile salmon and trout, is suspected of causing increased mortality to young salmon and the

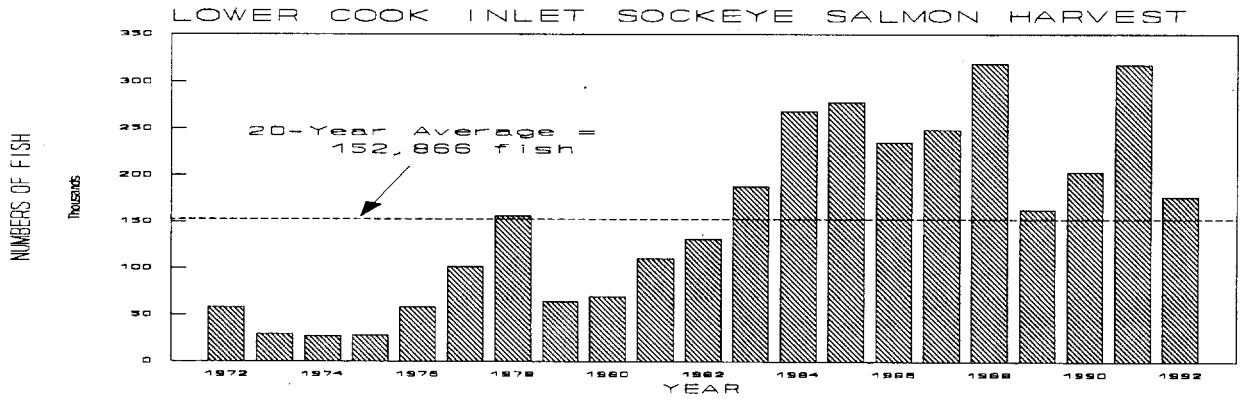

Figure 2. Historical commercial harvests of sockeye salmon, Lower Cook Inlet, 1972 - 1992.

subsequent weak adult return to the Chenik Lake system. At Bear Lake in Resurrection Bay of the Eastern District, a forecasted return of 20,000 sockeye amounted to an actual return of less than 2,000 fish. The only enhanced system to achieve its preseason projection for sockeye salmon was Kirschner Lake in the Kamishak Bay District, with a commercial catch equal to the forecast of 40,000 fish.

Natural returns of sockeye salmon to LCI systems were generally weak but maintenance level escapements occurred in nearly all systems. At English Bay Lakes in the Southern District, an egg take intended to rehabilitate a severely depressed stock of sockeye salmon was conducted by North Pacific Rim in 1992, the fourth consecutive year of a project originally begun by the FRED Division. First year returns from this effort are expected during 1993. Despite the weak returns of sockeye and the low overall catches, this species provided nearly 80 percent of the exvessel value of the entire salmon fishery during 1992 (Table 2).

Coho Salmon

The commercial harvest of 4,400 coho salmon in 1992 represented the lowest LCI total for this species since 1978 and was only about one-fourth of the average over the last ten years (Figure 3, Table 3). The harvest was almost equally split between the Southern, Eastern, and Kamishak Districts, but catches in the Eastern District were primarily from the Seward Silver Salmon Derby and CIAA cost recovery at Bear Lake.

Coho run assessment in LCI is limited, with commercial and sport harvests providing the best indicators of run strength, and the returns during 1992 were considered average to weak. Small runs and relatively low prices discouraged the majority of the fleet from targeting on this species late in the season. One aerial

survey of Clearwater Slough, a coho "index" stream at the head of Kachemak Bay, during September indicated good escapement to that system.

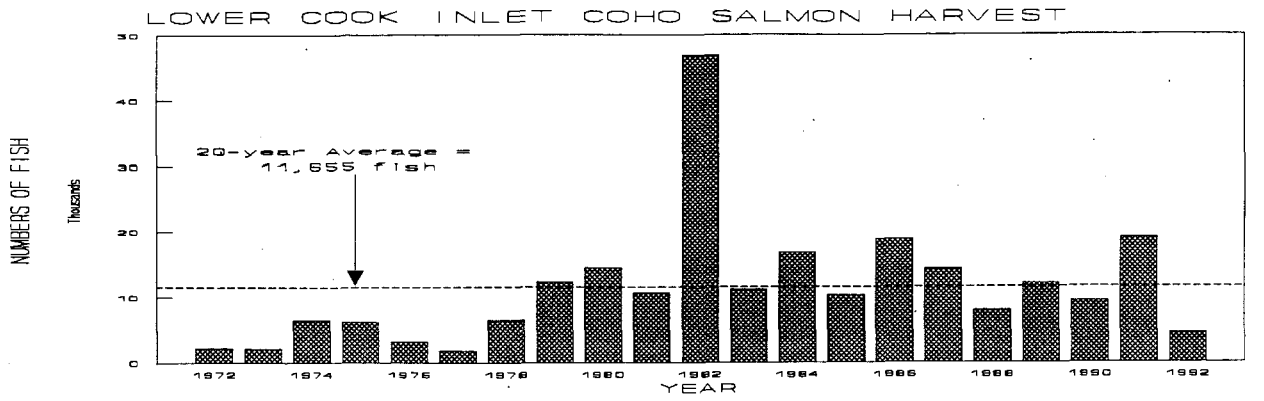

Figure 4. Historical commercial harvests of coho salmon, Lower Cook Inlet, 1972-1992.

Pink Salmon

Returns of pink salmon, normally the dominant species in numbers of commercially harvested fish in Lower Cook Inlet, fell far below expectations in 1992. The total commercial harvest of 480,000 pinks was only half of the 20-year average (Figure 4, Table 3). Over 85 percent (417,000 fish) of the total was taken in the

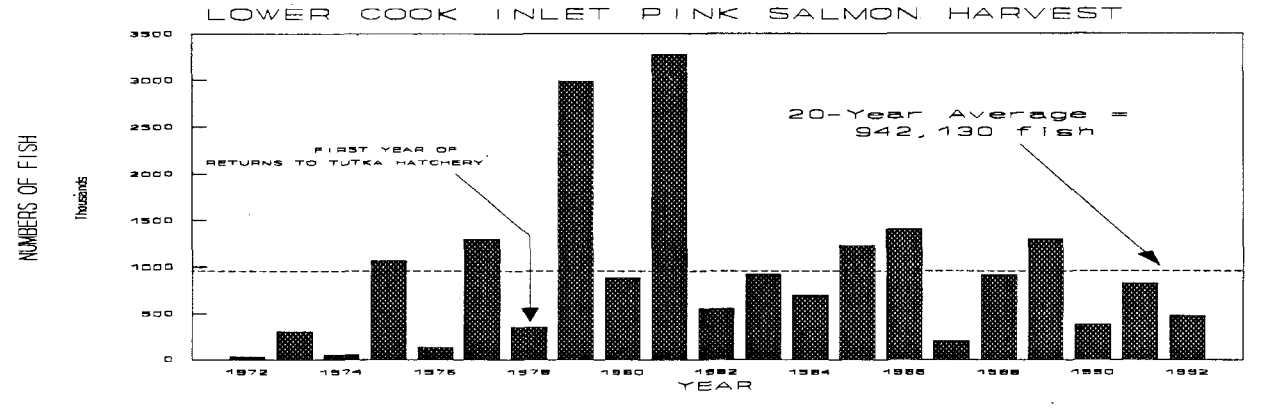

Figure 4. Historical commercial pink salmon harvest, Lower Cook Inlet, 1972-1992.

Southern District, and two-thirds (276,000 fish) of the Southern District total was utilized for Tutka Hatchery cost recovery. The estimated hatchery return, including escapement, broodstock, and fish returning to the Halibut Cove Lagoon release site, was 471,000 pinks or only 69 percent of the preseason projection of 685,000 fish.

The Outer District, and the Port Dick area in particular, normally contributes significantly to commercial pink harvests, but the 1992 catch of 146 pinks represented the second lowest catch for this district since statehood. Pink salmon escapements in all districts of Lower Cook Inlet were weak in 1992. For the second straight year, strong late-season pink salmon catches occurred in the outer areas of the Aialik Subdistrict in the Eastern District. Tag recoveries from these late Eastern District catches indicated substantial numbers of pink salmon bound for Prince William Sound, as shown in the following table:

Fishing Period	Hours	Pink Catch	Date Sampled	# Fish Sampled	% Scanned	Clips Recov'd.	Tags Recov'd.
8/10-12	48	14,801					
8/13-15	48	28,643					
8/17-19	48	11,379	8/19	2,352	20.7%	9	4
8/20-22	48	4,767	8/23	712	14.9%	5	3
8/24-26	48	417					
TOTALS	240	60,007		3,064	5.1%	14	7

The seven recovered tags originated from three different pink salmon hatcheries in Prince William Sound. Ongoing tag recovery research being conducted in Prince William Sound suggests that every tag recovered represents approximately 575 fish of Prince William Sound Aquaculture Corporation (PWSAC) hatchery origin. Such numbers provide hard evidence that the seine fishery operating

in the outer areas of Aialik Subdistrict intercepts pink salmon primarily bound for Prince William Sound.

NOTE: PROPOSAL #21 addresses commercial salmon seining up to three miles offshore of the Outer and Eastern Districts of Lower Cook Inlet.

Chum Salmon

The 1992 commercial chum salmon harvest of 22,200 fish was the fourth successive below-average season in Lower Cook Inlet, representing only about one-fifth of the 20-year average (Figure 5, Table 3). The low numbers were somewhat anticipated based on the recent years' trend of below average returns, and as a result conservative fishing schedules were implemented in an effort to secure adequate escapements and reverse the declines in chum salmon numbers. The conservative strategy was insufficient to counteract apparently weak returns to most areas and few systems achieved their minimum goals. One major system, McNeil River in the Kamishak Bay District, did attain the lower end of its escapement goal range of 20,000 to 40,000 fish. On a positive note, the relatively strong showing of the age-4 component in the 1992 catches suggested that next year's return of age-5 fish could be significantly greater than that of recent years.

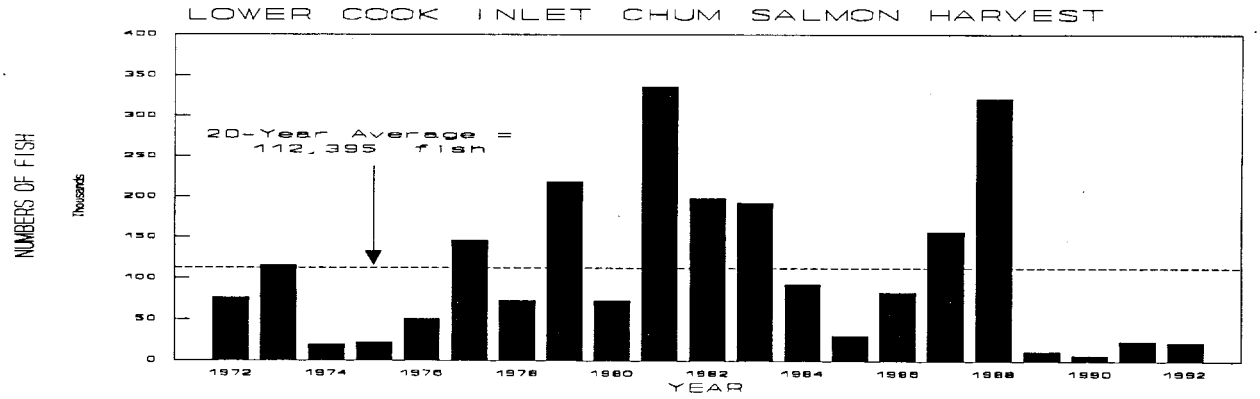

Figure 5. Historical commercial chum salmon harvest, Lower Cook Inlet, 1972-1992.

SET GILLNET FISHERY

An Area H set gillnet permit allows fishing in both Upper and Lower Cook Inlet, but only five beaches in Lower Cook Inlet, all located along the south shore of Kachemak Bay in the Southern District (Figure 9), are open to commercial set gillnetting. The limited area provides only enough productive fishing sites to accommodate approximately 25 set gillnet permits.

The 1992 LCI set gillnet harvest totalled 37,000 fish, slightly over half of the 20-year average (Figure 6, Table 9). Catches were dominated by sockeye (46 percent) and pinks (43 percent). Catches of chinook salmon, at 1,288 fish (3.5 percent), were the second highest ever recorded and double the 20-year average. For comparison, typical species composition in the commercial set gillnet fishery during the past decade has been 52 percent sockeye, 32 percent pink, 7 percent chum, 7 percent coho, and 2 percent chinook. Enhancement efforts in Seldovia Bay and Halibut Cove Lagoon are probably responsible for the increased chinook catch during 1992.

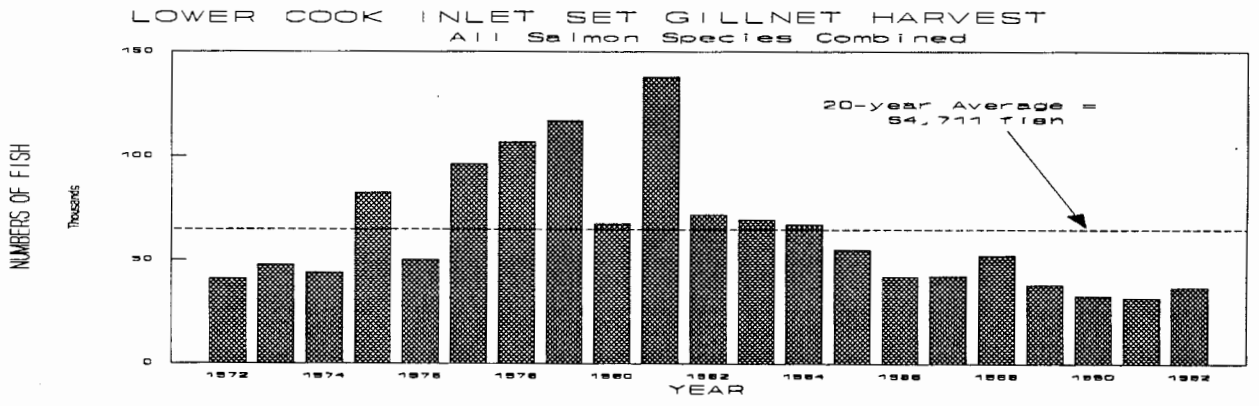

Figure 6. Historical commercial set gillnet salmon harvests, Lower Cook Inlet, 1972 - 1992.

NOTE: Three proposals affecting the set gillnet fishery have been submitted to the Board of Fisheries for consideration: PROPOSAL #18 would change the regulatory

description of the southern boundary in the set gillnet fishery in Seldovia Bay; PROPOSAL #22 seeks to increase set gillnet fishing time in the Tutka Bay Subdistrict commensurately with that of purse seining; and PROPOSAL #25 seeks to delay the regulatory opening date of the set gillnet fishery in Halibut Cove.

NEW PORT GRAHAM HATCHERY

In an effort to augment natural fish production and provide increased employment opportunities in the native village of Port Graham, the Port Graham Hatchery Corporation applied for a permit to operate a private non-profit (PNP) hatchery. The application was reviewed and approved by the CIAA's regional planning team and the permit was subsequently granted in September, 1992. Port Graham is located approximately 21 nautical miles southwest of Homer on the south side of Kachemak Bay (Figure 9). The hatchery has been conducting experimental egg-takes and fry releases via a scientific/educational permit since 1990. Although all efforts thus far have been directed toward pink salmon, investigation into the feasibility of sockeye salmon production has also been considered.

The PNP permit allows broodstock collection from a natural run of pink salmon in the Port Graham River, at the head of Port Graham. However, the Port Graham River pink run has historically experienced significant natural fluctuations in escapements despite conservative fishing schedules, causing some concern over protection of the natural stocks. Consistent with the priority of managing for natural stocks (AS 16.05.730), a broodstock collection schedule based on the desired natural escapement as well as historical escapement levels into Port Graham River has been devised to offer maximum protection to the wild pink salmon stock during years of weak returns.

Harvest of returning hatchery stocks could potentially occur in commercial purse seine and set gillnet fisheries as well as a subsistence set gillnet fishery in Port Graham. Hatchery fish will likely intermix with wild stocks bound for the Port Graham River. Management decisions must address the effects of these various fisheries so as to afford protection to the natural stocks until adequate escapement into Port Graham River is achieved. A small natural return of chum salmon to Port Graham River also occurs, but this run has been depressed in recent years and management measures must strive to protect this species as well.

The approved Port Graham Hatchery Basic Management Plan designated a Special Harvest Area (SHA) to allow for broodstock collection and cost recovery harvest (Figure 10). The SHA was designed to provide a migration corridor on the northeast side of the bay for wild stocks traveling to Port Graham River at the head of the bay. Restricting the harvest in Port Graham to the SHA is expected to afford some limited protection to the natural spawning stocks of pink and chum salmon. Once hatchery broodstock and cost recovery requirements are met, remaining surpluses may be harvested by the common property fishery inside the SHA. However, no guarantee of broodstock and/or cost recovery can be assumed. Fishing time will have to be restricted until the fish become spatially segregated or until adequate escapements are achieved in the river.

NOTE: Proposal #360 seeks to create a formalized management plan for the Port Graham Hatchery.

SUBSISTENCE SALMON FISHERIES

KACHEMAK BAY FALL COHO SALMON SUBSISTENCE FISHERY

The Southern District (Kachemak Bay) fall coho salmon gillnet fishery dates back prior to statehood under varying names, being

known as a "personal use" fishery during the years 1986-1990 and historically affected by numerous court rulings. After the status of the fishery was changed to subsistence by the Board of Fisheries in 1990, the Alaska Superior Court ruled, just one week prior to the opening of the 1991 Southern District fishery, that subsistence regulations adopted by the Board were invalid. The Department responded by drafting an Emergency Regulation allowing that year's fishery to be prosecuted under Personal Use regulations. In May of 1992, the Alaska Supreme Court struck down the earlier court's ruling, thus allowing this traditional fishery to occur under Subsistence regulations in 1992.

Historically the target species in the Southern District gillnet fishery has been coho salmon, with returning fish a mixture of natural stocks bound primarily for the Fox River drainage at the head of Kachemak Bay and enhanced runs bound for the Homer Spit fishing lagoon and Fox Creek near the head of Kachemak Bay. Management of the fishery has been determined by the Southern District Coho Salmon Subsistence Fishery Management Plan (5 AAC 01.596.). The fishery normally is opened by regulation on August 15 and is closed by emergency order when the harvest of coho salmon is anticipated to fall within a range of 2,500 and 3,500 fish, as directed by the management plan. This harvest level was adopted by the Board of Fisheries based on average coho catches prior to any coho salmon enhancement efforts by the FRED Division in Kachemak Bay. Individual catch limits are 25 salmon per permit holder and 10 additional salmon for each dependent of the permit holder.

One additional measure adopted by the Board of Fisheries in 1990 was a provision to close upper Kachemak Bay to all commercial salmon fishing and all sport fishing for coho salmon (including fresh water drainages) concurrently with the closure of the subsistence fishery. Reasons for this closure were twofold, one

based on conservation concerns regarding natural coho stocks in the Fox River drainage and the second involving the priority of subsistence over other user groups.

The number of subsistence permits issued for the 1992 fishery (365) was the lowest since 1978 and only slightly greater than the average of all years since 1969 (Table 10). The fishery opened on August 17, and voluntary inseason catch reports, combined with experience from previous years' fisheries, indicated that the lower end of the harvest range would be achieved by the end of the second regularly scheduled 48-hour fishing period. The closure was announced to coincide with the end of this period on August 22. A total of 96 hours fishing time (two regularly scheduled 48-hour fishing periods) was allowed, making the 1992 fishery the second shortest on record. Preliminary catch figures (Figure 7, Table 10) based on 339 permit holders reporting (93 percent of the total) are as follows: 2,268 coho; 634 pink; 62 sockeye; 21 chum; and 5 chinook. The 1992 coho catch represents the lowest total since 1979 in this fishery.

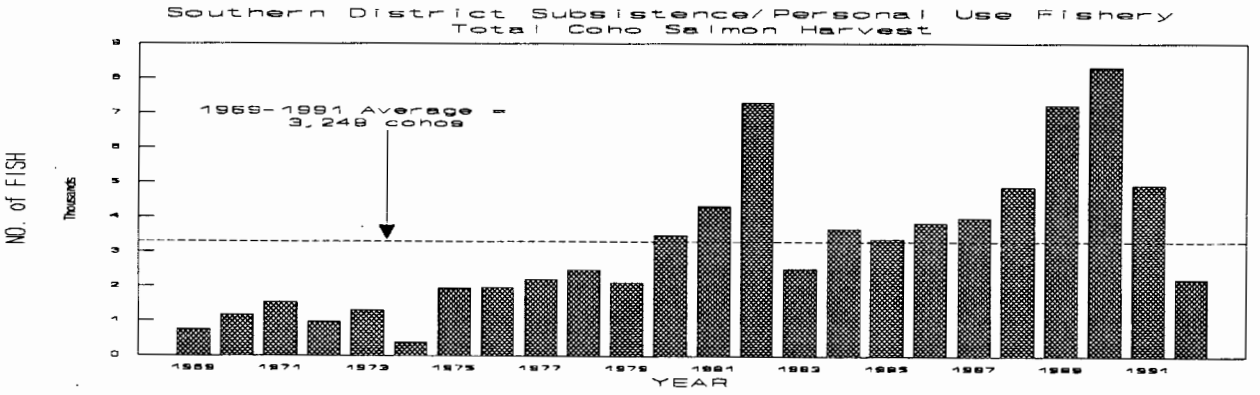

Figure 7. Historical coho salmon harvests in the Southern District Coho Salmon Subsistence/Personal Use Set Gillnet Fishery, Lower Cook Inlet, 1972-1992.

The major factor affecting the lower number of permits issued for the Southern District subsistence fishery in 1992 was the availability of similar fisheries in Upper Cook Inlet and the

strength of the targeted returns in those fisheries. Many people who normally fish the Southern District for coho opted instead to fish Upper Cook Inlet for sockeye salmon based on the strong returns to that management area.

The low coho catches in the 1992 subsistence fishery are a reflection of both run strength and run timing. The limited assessment of coho returns in Lower Cook Inlet, primarily the monitoring of commercial and sport harvests, indicated average to weak returns. Additionally, the coho run appeared to be a few days to one week later than normal. The conservatively short duration of the fishery and the late run timing combined to afford an extra measure of protection to natural coho returns. Because of the late timing, allowing additional fishing time could have easily resulted in an unacceptably high harvest rate on natural segments of the returns, especially considering the suspected weakness of the runs. An aerial survey flown to assess coho escapement in the Fox River drainage in September documented relatively strong escapement (approximately 850 fish) by historical standards in Clearwater Slough, a major coho salmon spawning tributary used as a coho "index" stream in the Southern District.

Several important issues were brought to light by the 1992 Southern District subsistence fishery, mostly revolving around the coho enhancement efforts in Kachemak Bay. Coho salmon produced by stocking have changed the nature of the fishery by shifting the areas considered most productive and consequently altering the intensity of effort in these areas. Returns from enhancement projects have contributed significantly to harvests in the subsistence gillnet fishery, particularly in the vicinity of the Homer Spit, thus making the Spit probably the most sought after fishing area in the entire bay. The congestion of nets on the Spit during the first two days of the 1992 fishery led to blatant violations of the regulation requiring a 600 foot minimum distance between nets and resulted in the confiscation of several nets.

Increased production from enhancement has also impacted the duration of the subsistence fishery. Prior to enhancement, the fishery was usually allowed to proceed from the regulatory opening on August 15 until the regulatory closure on September 15, and most participants had ample opportunity to obtain their fish over this time period. It followed, then, that late run timing in a given year had little effect on catches since effort could be arranged around the peak of the run. In recent years, however, effort has been concentrated at the start of the season, particularly in the area of the Homer Spit due to the ease of access and the attraction of the enhanced production. As a result, catches over the past two seasons have approached the guideline range within the first week after opening, effectively eliminating those fishermen who either are unable to fish during the opening week or who simply fail to secure a fishing site during that week. Additionally, for fishermen whose catches are comprised primarily of natural stocks, such as those fishing the south side of Kachemak Bay, a short season coupled with late run timing, as occurred in 1992, means few if any cohos in their catches.

Gillnet congestion on the Homer Spit also has apparently created navigational hazards around the Homer Small Boat Harbor. In the clamor for fishing sites near the enhancement lagoon, some fishermen have used questionable judgement in placement of their nets, causing the Homer Harbormaster and the Homer Port and Harbor Commission to warn that the potential for vessel accidents is increased while the fishery is open. Although not biological in nature, the issue of safety cannot be ignored and deserves consideration.

NOTE: PROPOSAL #26 seeks to establish a formal management plan for a Personal Use coho salmon gillnet fishery in Kachemak Bay that would allow for a fishery targeting this resource during years when a subsistence fishery does not occur.

ENGLISH BAY/PORT GRAHAM SUBSISTENCE FISHERY

The second major subsistence fishery in Lower Cook Inlet benefits residents of the villages of English Bay and Port Graham, located approximately 21 nautical miles southwest of Homer on the south side of Kachemak Bay (Figures 9 and 10). Most fishing occurs within close proximity to the villages and targets on sockeye salmon returning to the English Bay Lakes system. Some additional fishing also occurs in Koyuktolik ("Dogfish") Bay, located about 7 nautical miles south of English Bay, and targets on non-local stocks of chinook salmon.

The sockeye salmon stock at English Bay Lakes has been severely depressed for much of the last decade, with returns failing to achieve the minimum escapement goal for seven consecutive years since 1984. As a result, the Port Graham Subdistrict, which includes both Port Graham and the English Bay Section, was closed again in 1992 to commercial, sport, and subsistence fishing beginning June 1 to protect returning sockeye adults. These areas remained closed to subsistence fishing until July 17, when the sockeye run was effectively over, while the commercial fishery remained closed for the entire season. Additionally, the Koyuktolik Bay area was also closed to subsistence fishing beginning June 1 in an effort to provide added protection to English Bay sockeyes, but it was reopened on June 5 when it became apparent that little interception of sockeyes would occur since large mesh gear was being employed to target chinook salmon. The final 1992 escapement estimate for English Bay Lakes, obtained from weir counts, was 6,400 sockeyes, less than the minimum established goal of 10,000 fish.

The closures of the Port Graham and English Bay areas to subsistence fishing resulted in significantly reduced catches of sockeye salmon at both villages compared to historical averages (Tables 11 and 12). The weak natural pink salmon return to the

Port Graham River, as well as the failure of the first year return of pinks to the Port Graham Hatchery, also caused reduced subsistence catches of this species after the areas reopened to fishing in mid-July. The only significant increase in traditional catches occurred in the chinook salmon harvest by the residents of English Bay, probably due to targeted effort in Koyuktolik Bay.

1993 LOWER COOK INLET SALMON HARVEST PROJECTIONS

Sockeye Salmon

Sockeye salmon harvest projections in Lower Cook Inlet are based on both forecasts of fish returning to enhancement sites and average historical harvests of natural runs. The preliminary 1993 forecasted harvest of sockeye salmon is 250,900 fish, nearly 1.5 times the 176,600 fish landed in 1992 and seven percent more than the average annual catch of 235,400 fish during the last decade. Returns to Chenik and Kirschner Lakes in the Kamishak Bay District, with a combined harvest forecast of 40,000 fish, and to Leisure and Hazel Lakes in the Southern District, with a harvest forecast of 90,000 fish, are once again expected to be the major contributors to enhanced sockeye production. First year returns of sockeye salmon resulting from a FRED/CIAA enhancement program at Bruin Lake in the Kamishak Bay District are projected to provide 20,000 additional enhanced fish to the commercial harvests. Natural returns to the Southern, Outer, Eastern, and Kamishak Bay Districts are expected to contribute up to 101,000 sockeyes to the 1993 harvests.

A CIAA enhancement project at Bear Lake in Resurrection Bay of the Eastern District is expected to produce an additional unknown number of sockeye salmon for harvest in 1993. Bear Lake enhancement efforts have been ongoing since 1962, primarily focused

on increased coho salmon production for the Resurrection Bay recreational fishery. In 1988, Board of Fisheries action allowed a broadening of the scope of enhancement in Bear Lake to include the production of sockeye salmon intended for commercial harvest as set forth in the Bear Lake Management Plan (AS 5 AAC 21.375). Both sockeye fry and accelerated-growth smolts, also known "age zero" or "zero check" smolts, have been planted in the Bear Lake system, but success of this sockeye program has yet to be determined. Adult returns to this project failed to materialize in 1992, amounting to only 2,000 fish, but this return was predicted to be primarily comprised of adults originating from the aforementioned accelerated-growth smolts. The 1993 return is expected to be significantly greater due to the contribution from both fry and smolts.

NOTE: PROPOSAL #23 seeks to allow drift gillnets as a legal gear type in Resurrection Bay of the Eastern District to target on the expected return of sockeye salmon to Bear Lake.

Pink Salmon

The Lower Cook Inlet pink salmon harvest is projected to exceed 1.1 million fish in 1993. Pink salmon escapements to most major systems in 1991 were considered good, and the resulting natural production is expected to contribute approximately 610,000 fish to the 1993 harvests. Hatchery returns to Tutka Bay Hatchery and the Halibut Cove Lagoon remote release site are expected to provide the additional 524,000 pinks for harvest.

Chum Salmon

Chum salmon harvests in Lower Cook Inlet during 1993 are expected to approach 121,000 fish based solely on the 1980 through 1992 average catches. LCI returns of chum salmon have been extremely

poor for the last four seasons, but strong escapements to most systems during the 1988 brood year and a fair showing of age-4 fish in the 1992 catches suggest that the contribution of age-5 fish could bring the actual 1993 harvests up to forecasted levels. Although Tutka Bay Hatchery has attempted efforts at chum salmon production, adult returns in 1993 are not expected to provide numbers significant enough to contribute to commercial harvests.

The following table summarizes the preliminary projected harvest figures by species in the Lower Cook Inlet management area during 1993:

SPECIES	HARVESTS OF ENHANCED RETURNS	HARVESTS OF NATURAL RETURNS	TOTAL HARVEST
Chinook	10,200[a]		10,200
Sockeye	150,000[b]	100,900	250,900
Coho	14,200[a]		14,200
Pink	524,000	610,000	1,134,000
Chum		120,900	120,900
TOTAL	698,400	831,800	1,530,200

[a] Projected figures for these species include only returns from enhancement projects intended for recreational fisheries.
[b] Enhanced sockeye total does not include any projection for Bear Lake in Resurrection Bay of the Eastern District.

Table 1. Commercial, hatchery, and derby salmon catches in numbers of fish by species and district, Lower Cook Inlet, 1992, (all figures are for purse seine unless otherwise noted).

DISTRICT	Chinook	Sockeye	Coho	Pink	Chum	Total
SOUTHERN						
Set Net	1,288	17,002	848	15,958	1,687	36,783
P. Seine:						
Commercial	564	82,455	429	125,106	193	208,747
Hatchery	0	7,336	0	275,957	5	283,298
TOTAL	**1,852**	**106,793**	**1,277**	**417,021**	**1,885**	**528,828**
OUTER	**0**	**572**	**1**	**146**	**181**	**900**
EASTERN						
Commercial	0	432	1,131	60,007	86	61,656
Derby (hand troll)	0	0	477	0	0	477
Hatchery (weir)[a]	0	0	48	0	0	48
TOTAL	**0**	**432**	**1,656**	**60,007**	**86**	**62,181**
KAMISHAK						
Commercial	39	60,078	1,488	2,594	20,051	84,250
Hatchery	0	8,769	0	0	0	8,769
TOTAL	**39**	**68,847**	**1,488**	**2,594**	**20,051**	**93,019**
LCI TOTAL	1,891	176,644	4,422	479,768	22,203	684,928
PERCENT	0.3	25.8	0.6	70.1	3.2	100.0
1972 - 91 AVERAGE	898	152,866	11,655	942,130	112,935	1,219,944

[a] Hatchery cost recovery catches through 9/14/92.

Table 2. Exvessel value of the commercial salmon harvest in thousands of dollars by species, Lower Cook Inlet, 1992[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1972	1	130	6	22	146	305
1973	3	113	5	310	251	682
1974	5	283	30	100	77	495
1975	3	106	27	1,456	71	1,663
1976	7	287	13	207	217	731
1977	7	620	9	1,719	604	2,959
1978	62	1,516	52	370	341	2,341
1979	36	621	68	4,495	1,097	6,317
1980	12	336	64	1,196	298	1,906
1981	18	740	69	5,334	1,346	7,507
1982	28	827	367	406	820	2,448
1983	20	704	57	696	513	1,990
1984	23	1,393	120	635	242	2,413
1985	47	1,637	86	974	78	2,822
1986	21	1,414	132	1,245	201	3,013
1987	27	1,951	118	295	598	2,989
1988	32	3,812	127	2,237	2,548	8,756
1989	33	1,213	59	1,660	39	3,004
1990	29	1,287	28	306	31	1,681
1991	19	1,115	36	275	48	1,495[b]
1992	31	1,144	18	212	52	1,464[b]
1972-91 Average	22	1,005	74	1,197	478	2,776

[a] Values obtained by using the formula: (average price per lb.) x (average weight of fish) x (catch) = Exvessel value.
[b] Includes hatchery cost recovery.

Table 3. Commercial salmon catch in numbers of fish by species, Lower Cook Inlet, 1972 - 1992[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1972	88	57,897	2,234	28,663	75,543	164,425
1973	145	29,136	2,101	307,403	115,513	454,298
1974	183	27,428	6,514	50,601	19,210	103,936
1975	142	28,142	6,211	1,063,338	21,646	1,119,479
1976	450	58,159	3,216	136,445	50,822	249,092
1977	217	101,597	1,798	1,293,932	145,789	1,543,333
1978	1,747	156,404	6,529	352,561	73,518	590,759
1979	1,238	64,417	12,393	2,990,929	218,490	3,287,467
1980	424	69,442	14,505	889,703	73,492	1,047,566
1981	1,086	110,255	10,776	3,279,183	336,093	3,737,393
1982	1,066	131,320	46,892	551,589	198,185	929,052
1983	873	187,645	11,219	927,607	192,319	1,319,663
1984	714	268,950	16,797	700,622	92,540	1,079,623
1985	1,043	278,694	10,327	1,229,708	30,640	1,550,412
1986	796	234,861	18,852	1,408,293	82,688	1,745,490
1987	1,179	248,848	14,354	201,429	157,018	622,828
1988	1,694	319,008	7,946	921,296	321,911	1,571,855
1989	1,893	163,271	12,089	1,296,926	11,305	1,485,484
1990	1,560	203,895	9,297	383,670	6,951	605,373
1991	1,419	317,947	19,047	828,709	24,232	1,191,354
1992	1,891	176,644	4,422	479,768	22,203	684,928
20-Year Avg.	898	152,866	11,655	942,130	112,395	1,219,944
1972-81 Avg.	572	70,288	6,628	1,039,276	113,012	1,229,775
1982-91 Avg.	1,224	235,444	16,682	844,985	111,779	1,210,113
'92 % of Ttl.	0.28	25.79	0.64	70.05	3.24	100.00

[a] Data source: Final IBM computer runs.

Table 4. Commercial catch and escapement of chinook salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1992.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Halibut Cove	949		949
Halibut Cove Lagoon	85		85
China Poot Bay	195		195
Neptune Bay	20		20
Tutka Bay	187		187
Barabara Creek	115		115
Seldovia Bay	301		301
SOUTHERN DISTRICT TOTAL	**1,852**		**1,852**
OUTER DISTRICT TOTAL	**0**		**0**
EASTERN DISTRICT TOTAL	**0**		**0**
KAMISHAK DISTRICT			
Iniskin Bay	1		1
Kirschner Lake	2		2
Chenik Lake	1		1
McNeil River	4		4
Douglas River	31		31
KAMISHAK DISTRICT TOTAL	**39**		**39**
TOTAL LOWER COOK INLET	**1,891**		**1,891**

[a] Chinook escapement in Lower Cook Inlet is very limited; no escapement surveys are conducted.

Table 5. Commercial catch (including hatchery cost recovery) and escapement of sockeye salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1992.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek	0	9	9
Halibut Cove	12,187		12,187
Halibut Cove Lagoon	2,492		2,492
China Poot Bay			
Common Property Fishery	56,312		
Hatchery Cost Recovery	7,336		
Total Run			63,648
Neptune Bay	12,331		12,331
Tutka/Kasitsna Bays	8,578	1	8,579
Seldovia Bay	3,285	8	3,293
Barabara Creek	4,272	2	4,274
English Bay	0	6,354	6,354
SOUTHERN DISTRICT TOTAL	**106,793**	**6,374**	**113,167**
OUTER DISTRICT			
Port Chatham	0	3	3
Windy River Left	0	1	1
Port Dick			
South Section	422		
Entrance	150		
Head End Creek		5	
Total Run			577
East Nuka (McCarty Fiord)			
Desire Lake	0	11,900	
Delight Lake	0	5,850	
Delectable (Ecstacy) Lake	0	1,000	
Total Run			18,750
OUTER DISTRICT TOTAL	**572**	**18,759**	**19,331**

-continued-

Table 5. (page 2 of 2)

Subdistrict/System	Catch	Escapement[a]	Total Run
EASTERN DISTRICT			
Resurrection Bay			
Bear Lake	0	1,921	1,921
Aialik Bay	432		
Aialik Lake		2,500	
Total Run			2,932
EASTERN DISTRICT TOTAL	**432**	**4,421**	**4,853**
KAMISHAK DISTRICT			
Ursus Cove	13		13
Rocky Cove	15		15
Kirschner Lake	40,043		40,043
Bruin Bay	503	40	543
Chenik Lake			
Common Property Fishery	5,609		
Hatchery Cost Recovery	8,769		
Amakdedori Creek		1,900	
Chenik Creek		9,269[b]	
Total Run			25,547
Paint River	0	300[c]	300
McNeil Cove	3,963		
Mikfik Creek		7,770	
Total Run			11,733
Kamishak/Douglas Reef	289		
Little Kamishak River		230	
Strike Creek		30	
Big Kamishak River		4,600	
Total Run			5,149
Douglas River/Silver Beach	9,643		
Douglas Clearwater Trib.		200	
Total Run			9,843
KAMISHAK DISTRICT TOTAL	**68,847**	**24,339**	**93,186**
TOTAL LOWER COOK INLET	**176,644**	**53,893**	**230,537**

[a] Peak aerial live counts.
[b] Weir counts.
[c] No freshwater escapement, fish ladder not opened during 1992.

Table 6. Commercial catch and escapement of coho salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1992.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Halibut Cove	94		94
Halibut Cove Lagoon	19		19
China Poot Bay	212		212
Neptune Bay	98		98
Tutka Bay	391		391
Seldovia Bay	58		58
Barabara Creek	405		405
SOUTHERN DISTRICT TOTAL	**1,277**		**1,277**
OUTER DISTRICT			
Port Dick (South Section)	1		1
OUTER DISTRICT TOTAL	**1**		**1**
EASTERN DISTRICT			
Aialik Bay	1,131		1,131
Resurrection Bay			
Seward Silver Salmon Derby	477		
Bear Lake (hatchery)	48[b]		
Total Run			525
EASTERN DISTRICT TOTAL	**1,656**		**1,656**
KAMISHAK DISTRICT			
Kirschner Lake	1		1
Douglas River	1,487		1,487
KAMISHAK DISTRICT TOTAL	**1,488**		**1,488**
TOTAL LOWER COOK INLET	**4,422**		**4,422**

[a] Escapement estimates derived from limited aerial surveys. Numbers represent unexpanded aerial live counts.
[b] Cohos taken for private hatchery cost recovery through 9/14/92.

Table 7. Commercial catch (including hatchery cost recovery) and escapement of pink salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1992.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek	0	14,853	14,853
Halibut Cove	20,736		20,736
Halibut Cove Lagoon	37,697		37,697
China Poot Bay	26,040	4,116	30,156
Neptune Bay	9,649		9,649
Tutka/Kasitsna Bays			
Common Property Fishery	41,642		
Hatchery Cost Recovery	275,957[b]		
Hatchery Broodstock		67,324	
Sadie Cove Creek		455	
Tutka Head End Creek		[c]	
Tutka Lagoon Creek		26,653	
Jakolof Bay Creek		30	
Total Run			412,061
Barabara Creek	3,386	2,186	5,572
Seldovia Bay & River	1,914	14,682	16,596
Port Graham River	0	5,450	5,450
English Bay	0	[c]	0
SOUTHERN DISTRICT TOTAL	**417,021**	**135,749**	**552,770**
OUTER DISTRICT			
Dogfish Bay	0	[c]	0
Port Chatham	0	4,304	4,304
Chugach Bay	0	671	671
Windy Bay	0		
Windy River Left		8,203	
Windy River Right		3,856	
Total Run			12,059
Rocky Bay			
Scurvey Creek	0	629	
Rocky River	0	25,448	
Total Run			26,077

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Table 7. (page 2 of 3)

Subdistrict/System	Catch	Escapement[a]	Total Run
Port Dick			
South Section	65		
Entrance	81		
Port Dick-Head End Creek		6,881	
Port Dick-Slide Creek		3,890	
Port Dick-Middle Creek		[c]	
Port Dick-Island Creek		10,143	
Additional saltwater fish		2,500	
Total Run			23,560
Taylor Bay	0	257	257
Nuka Island (South)	0	6,105	6,105
East Nuka (McCarty Fiord)	0		
James Lagoon		428	
Desire Lake		351	
Delight Lake		293	
Total Run			1,072
OUTER DISTRICT TOTAL	**146**	**73,959**	**74,105**
EASTERN DISTRICT			
Aialik Bay	60,007		60,007
Resurrection Bay	0		
Bear Creek		2,345	
Salmon Creek		5,255	
Tonsina Creek		[c]	
Thumb Cove		386	
Total Run			7,986
EASTERN DISTRICT TOTAL	**60,007**	**7,986**	**67,993**
KAMISHAK DISTRICT			
Iniskin Bay	8		
Sugarloaf Creek		25	
Total Run			33
Cottonwood Bay	0	106	106
Ursus Cove	4		
Ursus Head Creek		116	
Brown's Peak Creek		5,025	
Ursus Lagoon Righthand		150	
Ursus Lagoon Creek		375	
Total Run			5,670

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Table 7. (page 3 of 3)

Subdistrict/System	Catch	Escapement[a]	Total Run
Rocky Cove	307		
Sunday Creek		2,930	3,237
Kirschner Lake	1,759		1,759
Bruin Bay	92	3,200	3,292
Chenik Lake	62		
Amakdedori Creek		3,200	
Total Run			3,262
Kamishak Rivers/Douglas Reef	20		20
Douglas River/Silver Beach	342		342
KAMISHAK DISTRICT TOTAL	**2,594**	**15,127**	**17,721**
TOTAL LOWER COOK INLET	**479,768**	**232,821**	**712,589**

[a] Escapement estimates in the Southern, Outer, and Eastern Districts derived from periodic ground surveys with stream life factors applied. Kamishak estimates are unexpanded peak aerial live counts.
[b] Tutka hatchery cost recovery total includes 60 pinks actually caught in China Poot Subdistrict.
[c] Insufficient survey data for escapement estimates.

Table 8. Commercial catch and escapement of chum salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1992.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek	0	147	147
Halibut Cove	85		85
Halibut Cove Lagoon	4		4
China Poot Bay	69		69
Neptune Bay	34		34
Tutka/Kasitsna Bays	550[b]		
Sadie Cove		[c]	
Tutka Head End Creek		[c]	
Tutka Lagoon Creek		63	
Jakolof Bay		98	
Total Run			711
Seldovia Bay	701		
Seldovia River		868	
Total Run			1,569
Barabara Creek	442		442
Port Graham River	0	1,356	1,356
SOUTHERN DISTRICT TOTAL	**1,885**	**2,532**	**4,417**
OUTER DISTRICT			
Dogfish Bay	0	799	799
Port Chatham	0	343	343
Windy Bay	0		
Windy River Left		56	
Windy River Right		272	
Total Run			328
Rocky River	0	180	180
Port Dick			
South Section	136		
Entrance	45		
Port Dick-Head End Creek		5,405	
Port Dick-Slide Creek		1,204	
Port Dick-Middle Creek		320	
Port Dick-Island Creek		6,662	
Total Run			13,772
Petrof River	0	5	5
East Nuka-James Lagoon	0	575	575
OUTER DISTRICT TOTAL	**181**	**15,821**	**16,002**

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Table 8. (page 2 of 3)

Subdistrict/System	Catch	Escapement[a]	Total Run
EASTERN DISTRICT			
Aialik Bay	86		86
Resurrection Bay			
Tonsina Creek		193	
Total Run			193
EASTERN DISTRICT TOTAL	**86**	**193**	**279**
KAMISHAK DISTRICT			
Iniskin Bay	208		
Iniskin River		3,354	
Sugarloaf Creek		1,791	
Total Run			5,353
Cottonwood Creek	0	6,085	6,085
Ursus Cove	1,562		
Ursus Lagoon Creek		1,380	
Ursus Head Creek		129	
Brown's Peak Creek		300	
Ursus Lagoon Righthand Cr.		694	
Total Run			4,065
Rocky Cove	1,168		
Sunday Creek		2,239	
Total Run			3,407
Kirschner Lake	472		472
Bruin Bay	312	8,500	8,812
Chenik Lake	220		220
McNeil River	2,041	19,206	21,247
Kamishak River/Douglas Reef	1,526		
Little Kamishak River		7,065	
Strike Creek		500	
Big Kamishak River		4,500	
Douglas (Reef) River		350	
Total Run			13,941

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Table 8. (page 3 of 3)

Subdistrict/System	Catch	Escapement[a]	Total Run
Douglas River/Silver Beach	12,542		
Douglas Beach Creek		100	
Total Run			12,642
KAMISHAK DISTRICT TOTAL	**20,051**	**56,193**	**76,244**
TOTAL LOWER COOK INLET	**22,203**	**74,739**	**96,942**

[a] Escapement estimates in the Southern, Outer, and Eastern Districts derived from periodic ground surveys with stream life factors applied. Kamishak estimates are unexpanded peak aerial live counts.
[b] Includes 5 fish taken incidentally during hatchery cost recovery.
[c] Insufficient survey data for escapement estimates.

Table 9. Commercial salmon set gillnet catch in numbers of fish by species in the Southern District, Lower Cook Inlet, 1972 through 1992[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1972	69	31,340	323	6,303	2,819	40,854
1973	134	23,970	1,089	20,222	2,374	47,789
1974	175	26,996	3,010	11,097	2,713	43,991
1975	96	26,588	2,337	49,490	4,020	82,531
1976	176	33,993	1,321	13,412	1,353	50,255
1977	175	54,404	869	38,064	2,765	96,277
1978	1,052	86,934	3,053	11,556	4,117	106,712
1979	483	34,367	7,595	69,368	5,266	117,079
1980	225	29,922	8,038	26,613	2,576	67,374
1981	222	53,665	6,735	68,794	8,524	137,940
1982	894	42,389	5,557	15,838	7,113	71,791
1983	822	41,707	1,799	20,533	4,377	69,238
1984	639	40,987	2,862	17,836	5,008	67,332
1985	958	23,188	3,908	22,898	4,221	55,173
1986	745	21,807	2,827	14,244	2,426	42,049
1987	653	28,209	2,025	9,224	2,419	42,530
1988	1,145	14,758	2,819	29,268	4,423	52,413
1989	1,281	13,970	4,792	16,210	1,877	38,130
1990	1,361	15,863	1,046	12,646	1,938	32,854
1991	842	20,525	5,011	3,954	1,577	31,909
1992	1,288	17,002	848	15,958	1,687	36,783
20 Year Avg.	607	33,279	3,351	23,879	3,595	64,711
1972-81 Avg.	281	40,218	3,437	31,492	3,653	79,080
1982-91 Avg.	934	26,340	3,265	16,265	3,538	50,342
'92 % of Ttl.	3.51	46.22	2.31	43.38	4.59	100.00

[a] Data source: Final IBM computer runs.

Table 10. Personal use / subsistence fishery catches for the Southern District of Cook Inlet, 1969 - 1992.

Year	Total Permits Issued	Permits Returned Number	Permits Returned %	Permits Actually Fished	Permits Not Fished	NUMBERS OF FISH Chinook	Sockeye	Coho	Pink	Chum	Other	Total
1969	47	44	93.6	35	9	0	9	752	38	0	17	816
1970	78	73	93.6	55	18	0	12	1,179	143	13	39	1,386
1971	112	95	84.8	53	42	2	16	1,549	44	7	20	1,638
1972	135	105	77.8	64	41	1	11	975	48	69	19	1,123
1973	143	128	89.5	82	46	0	18	1,304	84	40	9	1,455
1974	148	118	79.7	52	66	0	16	376	43	77	27	539
1975	292	276	94.5	221	55	4	47	1,960	632	61	95	2,799
1976	242	221	91.3	138	83	16	46	1,962	1,513	56	75	3,668
1977	197	179	90.9	137	42	12	46	2,216	639	119	84	3,116
1978	311	264	84.9	151	113	4	35	2,482	595	34	89	3,239
1979	437	401	91.8	238	163	6	37	2,118	2,251	41	130	4,583
1980	533	494	92.7	299	195	43	32	3,491	1,021	25	153[a]	4,765
1981	384	374	97.4	274	100	25	64	4,314	732	89	100	5,324
1982	395	378	95.7	307	71	39	46	7,303	955	123	8	8,474
1983	360	328	91.1	210	118	4	21	2,525	330	40	2	2,922
1984	390	346	88.7	219	127	4	25	3,666	821	87	25	4,628
1985	316	302	95.6	205	97	5	43	3,372	166	35	3	3,624
1986	338	310	91.7	247	63	7	68	3,831	3,132	56	0	7,094
1987	361	338	93.6	249	89	5	50	3,977	279	61	0	4,372
1988	438	404	92.2	287	117	14	60	4,877	1,422	75	0	6,448
1989	466	452	97.0	332	120	41	156	7,215	882	53	49	8,396
1990	578	543	93.9	420	123	12	200	8,323	1,846	69	0	10,450
1991	472	459	97.2	295	164	8	47	4,931	366	23	0	5,375
1992	365	339[b]	92.9	237	102	5	62	2,268	634	21	0	2,990
1969-91 Average	312	288	92.3	199	90	11	48	3,248	782	55	41	4,184

[a] Steelhead trout (*Oncorhyncus mykiss*).
[b] Figures for 1992 are preliminary and include both oral reports and returned permits through 10/16/92.

Table 11. Subsistence salmon catch in numbers of fish by species for the village of Port Graham, Lower Cook Inlet, 1981 through 1992[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total	House-holds
1981[b]	116	1,694	625	298	150	2,883	47
1982[b]	98	798	508	851	193	2,448	38
1983[c]	57	1,066	440	169	65	1,797	31
1984[c]	21	2,095	166	215	6	2,503	34
1985[c]	156	469	190	42	22	879	[d]
1986[b]	118	279	179	234	13	823	36
1987[e]	21	186	574	264	69	1,114	31
1988[f]	90	380	447	577	88	1,582	31
1989	48	94	555	524	46	1,267	32
1990	180	472	811	1,107	68	2,638	31
1991	178	61	355	1,454	173	2,221	32
1992[g]	127	54	109	446	164	900	32
1981-91 Average	105	690	441	521	81	1,833	34

[a] Data source: ADF&G, Subsistence Division, data files.
[b] Data include both subsistence set gillnet and rod/reel harvest.
[c] Data include only subsistence set gillnet harvest.
[d] No data.
[e] Forty-six percent set gillnet harvest, fifty-four percent rod/reel.
[f] Fifty-one percent set gillnet harvest, forty-nine percent rod/reel.
[g] Preliminary data, no harvest calendars for September or October.

Table 12. Subsistence salmon catch in numbers of fish by species for the village of English Bay, Lower Cook Inlet, 1981 through 1992[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total	House-holds
1981[b]	24	1,075	314	621	19	2,053	29
1982[b]	13	1,584	1,305	1,850	36	4,788	31
1983[c]	0	1,784	367	363	10	2,524	28
1984[c]	18	1,225	385	404	0	2,032	26
1985[c]	5	696	530	313	2	1,546	[d]
1986[b]	4	378	296	825	2	1,505	21
1987[c]	2	626	322	476	45	1,471	21
1988[f]	8	609	385	1,185	35	2,222	26
1989	0	60	651	868	0	1,579	29
1990	46	636	616	1,968	49	3,305	30
1991	4	574	1,508	3,087	46	5,219	35
1992[g]	72	400	180	289	59	1,000	35
1981-91 Average	11	841	608	1,088	22	2,568	28

[a] Data source: ADF&G, Subsistence Division, data files.
[b] Data include both subsistence set gillnet and rod/reel harvest.
[c] Data include only subsistence set gillnet harvest.
[d] No data.
[e] Sixty-three percent set gillnet harvest, thirty-seven percent rod/reel harvest.
[f] Thirty-seven percent set gillnet harvest, sixty-three percent rod/reel.
[g] Preliminary data, no harvest calendars for September or October.

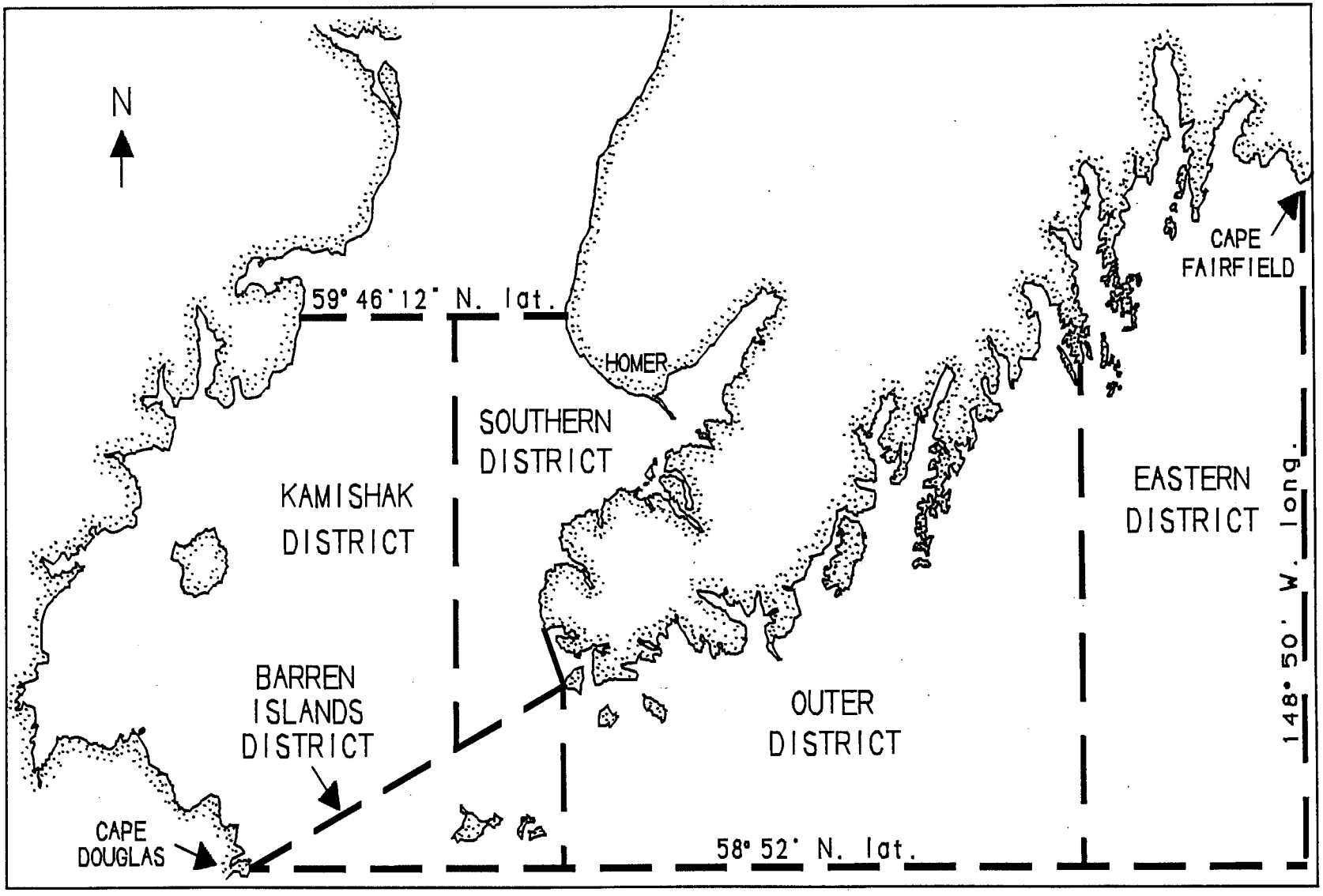

Figure 8. Lower Cook Inlet salmon and herring management area (not drawn to scale).

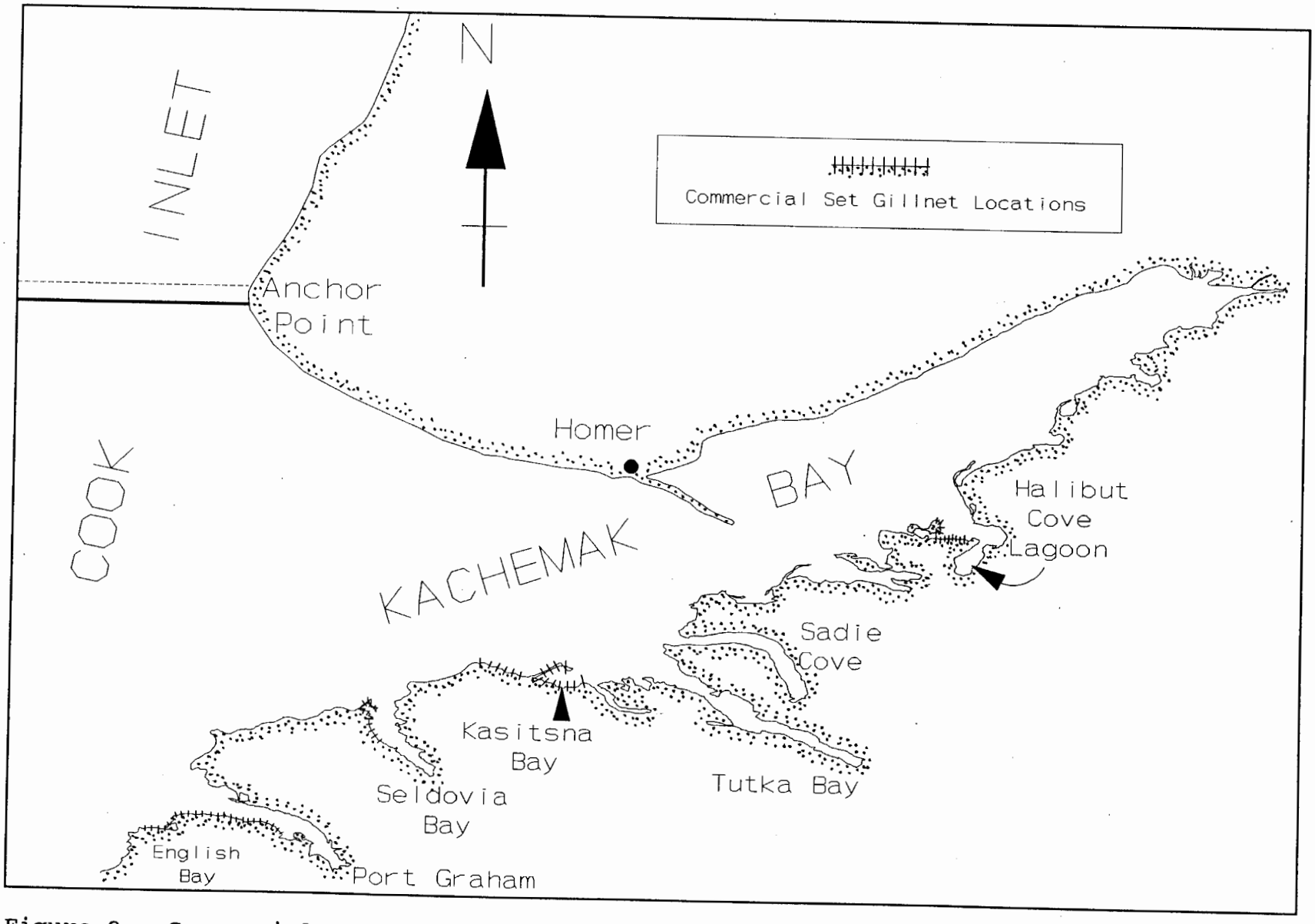

Figure 9. Commercial set gillnet locations in the Southern District of Lower Cook Inlet.

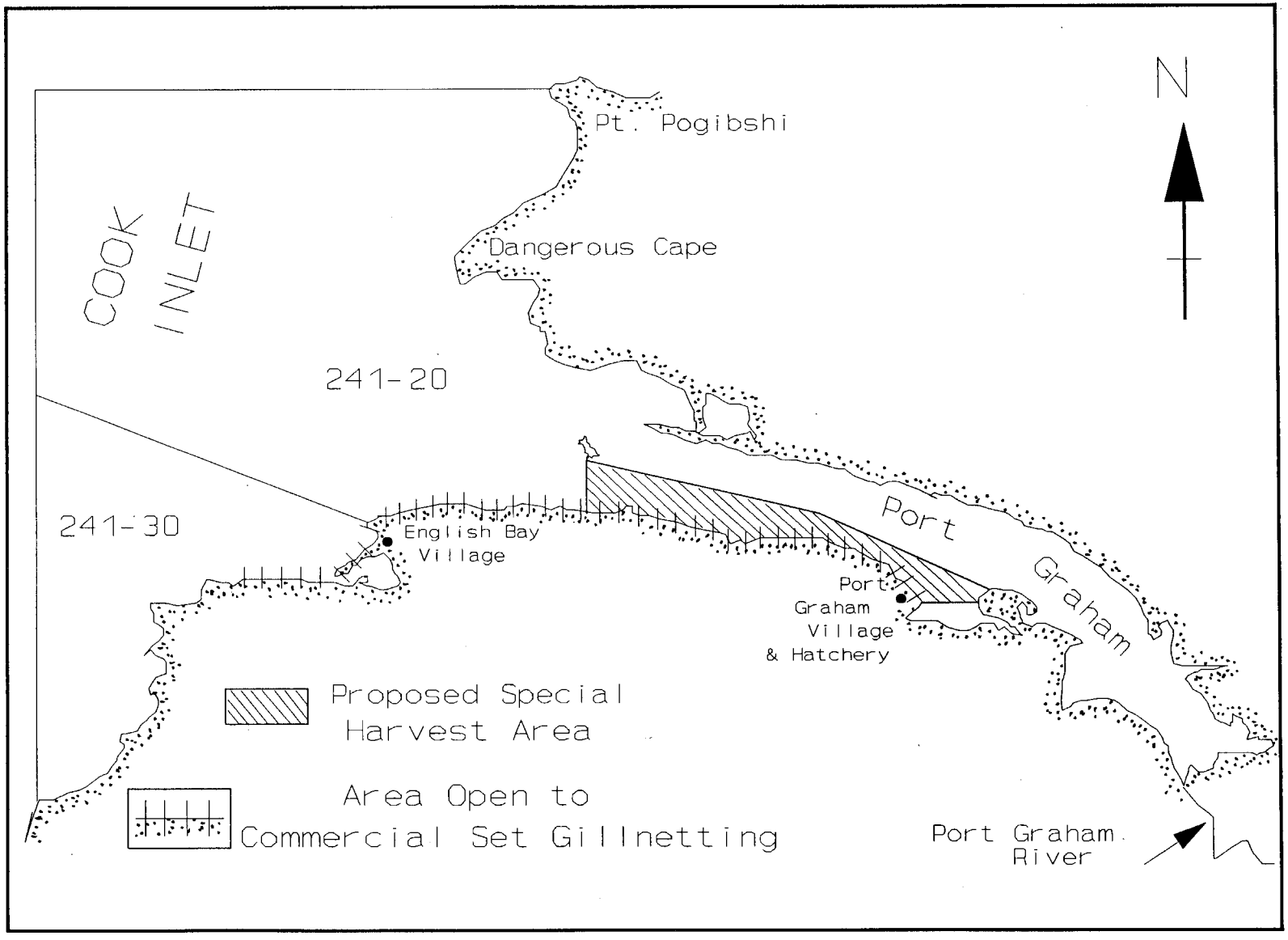

Figure 10. Chart of Port Graham and English Bay in the Southern District of Lower Cook Inlet, showing the location of the Port Graham Hatchery.